A.D. 1883. Oct. 24. N° 5053.
POHL'S Specification.

(1 SHEET)

FIG. 1.

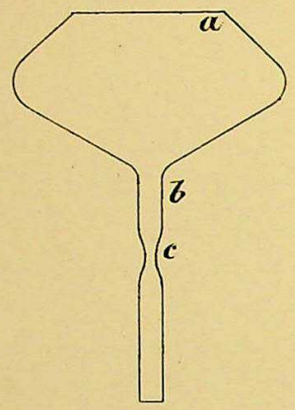


FIG. 2.

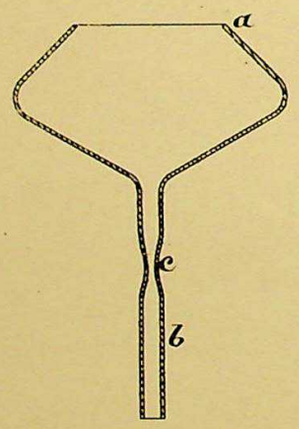


FIG. 8.

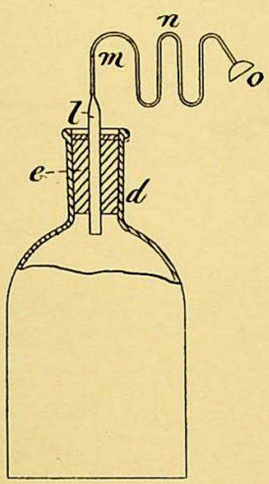


FIG. 5.

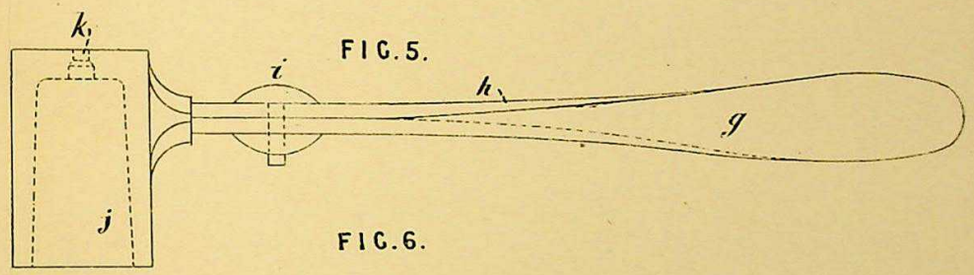


FIG. 6.

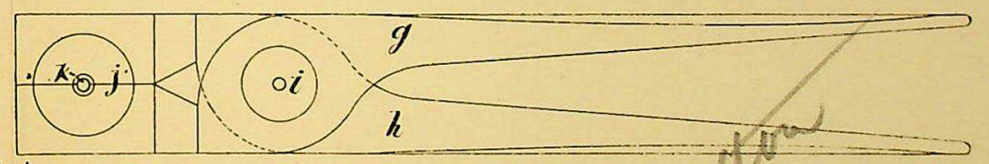


FIG. 7.

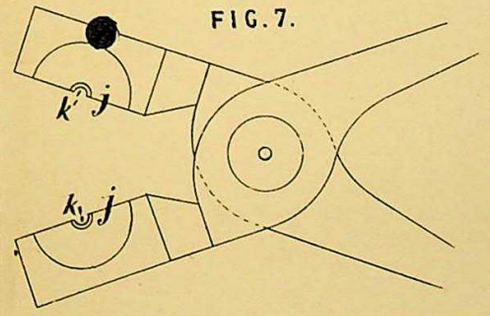


FIG. 3.

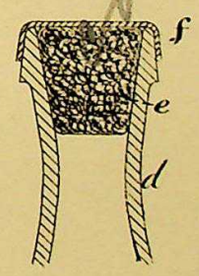
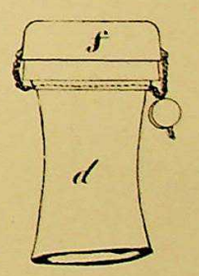


FIG. 4.



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Printers to the Queen's most Excellent Majesty. 1884

Malby & Sons, Photo-Litho.

99. FOODS ... RAGES
426-131
1883
RECORDED

A.D. 1883, *24th October.* N° 5053.

Preserving Milk, Beer, &c.

LETTERS PATENT to Otto Ernest Pohl of Liverpool in the County of Lancaster for an Invention of "IMPROVEMENTS IN PRESERVING MILK, BEER, AND FERMENTED AND PERISHABLE LIQUIDS AND IN APPLIANCES THEREFOR"

PROVISIONAL SPECIFICATION left by the said Otto Ernest Pohl at the Office of the Commissioners of Patents on the 24th October 1883.

OTTO ERNEST POHL of Liverpool, in the county of Lancaster, IMPROVEMENTS IN PRESERVING MILK, BEER, AND FERMENTED AND PERISHABLE LIQUIDS AND IN APPLIANCES THEREFOR

This invention relates to preventing decomposition or objectionable change of milk, beer and like liquids, by enclosing such liquids in specially prepared air tight bottles or receptacles and expelling when necessary the air from the said receptacles by heating the vessel and liquid

Hitherto it has been the practice in the preservation of milk and perishable beverages to use any ordinarily clean bottle or receptacle and to close the mouth thereof by means of a stopper of cork, gutta percha, or other material of vegetable origin. In spite of the utmost care such delicate liquids as milk invariably became contaminated within a very short time after being bottled and beer and other fermented liquids were often found to be unfit for use after comparatively short periods of preservation. Up to the present time it has been considered that the decomposition of the liquids has resulted from defective corking or closing of the bottles or receptacles and gutta percha, india rubber, rosin, wax, and like substances have been used to cover and seal the corks and mouths and exclude air.

Now I have discovered that the primary cause of the decomposition is not to be found in any defect in corking or closing but in the want of cleanliness of the bottles or receptacles used and in the unsuitability of corks or vegetable matter as stoppers. In the first place bottles or receptacles however well washed or cleansed in the ordinary manner contain numerous living organisms which only wait for suitable conditions to commence their work of destruction: and secondly, all substances of vegetable origin such as cork, india rubber, guttapercha, rosin and the like swarm with living germs and are therefor totally unfit for use where it is

desired to keep any easily decomposed liquid in usable condition for a reasonable length of time.

I have further discovered that satisfactory results can only be obtained in the preservation of liquids such as those hereinbefore mentioned when both the receptacle and the closing or stopping appliances are free from germ life.

My invention consists First. In preparing the bottles or receptacles by closing or stopping the mouths or orifices of the same before they are annealed by a mineral fibre such as asbestos. In this way germs or organisms are prevented from entering the said bottles or receptacles.

Second. In filling the bottles or receptacles so prepared with milk or other liquid with exclusion of air as far as possible.

Third. In closing such filled bottles or receptacles after the said liquid has been heated or boiled or not, with stoppers of a fibrous mineral material such as asbestos. A sealing of solid paraffin or other suitable mineral substance capable of being melted may also be used if desired.

Fourth. In making stoppers for bottles or receptacles of asbestos or like fibre compressed and consolidated in moulds to the required shape.

Fifth. In making stoppers for bottles or receptacles in which liquid is to be heated or boiled of asbestos or like fibre consolidated around a glass or rigid tube drawn out above the stopper to a fine capillary tube which is afterwards closed at the proper time by means of the blow pipe. The tube above the capillary portion is expanded into a cup or chalice.

SPECIFICATION in pursuance of the conditions of the Letters Patent, and of an Order of the Lord Chancellor, filed by the said Otto Ernest Pohl in the Patent Office on the 5th May 1884.

OTTO ERNEST POHL of Liverpool in the County of Lancaster, "IMPROVEMENTS IN PRESERVING MILK, BEER, AND FERMENTED AND PERISHABLE LIQUIDS AND IN APPLIANCES THEREFOR"

This invention relates to preventing decomposition or objectionable change of milk, beer and like liquids, by enclosing such liquids in specially prepared air tight bottles or receptacles and expelling when necessary the air from the said receptacles by heating the vessel and liquid.

Hitherto it has been the practice in the preservation of milk and perishable beverages to use any ordinarily clean bottle or receptacle and to close the mouth thereof by means of a stopper of cork gutta percha or other material of vegetable origin. In spite of the utmost care such delicate liquids as milk invariably became contaminated within a very short time after being bottled and beer and other fermented liquids were often found to be unfit for use after comparatively short periods of preservation. Up to the present time it has been considered that the decomposition of the liquids has resulted from defective corking or closing of the bottles or receptacles and gutta percha, india rubber, rosin, wax and like substances have been used to cover and seal the corks and mouths and exclude air.

Now I have discovered that the primary cause of the decomposition is not to be found in any defect in corking or closing but in the want of cleanliness of the bottles or receptacles used and in the unsuitability of corks or vegetable matter as stoppers. In the first place bottles or receptacles however well washed or cleansed in the ordinary manner contain numerous living organisms which only wait for suitable conditions to commence their work of destruction and secondly all substances of vegetable origin such as cork india rubber gutta percha rosin and the like swarm with living germs and are therefore totally unfit for use where it is desired to keep any easily decomposed liquid in usable condition for a reasonable length of time.

I have further discovered that satisfactory results can only be obtained in the preservation of liquids such as those hereinbefore mentioned when both the receptacle and the closing or stopping appliances are free from germ life.

My invention consists First. In preparing the bottles or receptacles by closing or stopping the mouths or orifices of the same before they are annealed by a mineral fibre such as asbestos. In this way germs or organisms are prevented from entering the said bottles or receptacles.

Bottles when blown at the glass works are closed with an asbestos stopper (preferably heated) in the red hot state and then placed in the annealing room. Any germs getting in by the breath of the blower are burnt and the rarified air when contracting is supplemented by air from the outside filtered through the asbestos stopper from all impurities and life germs. The asbestos stopper which may be rolled by hand or pressed by machinery is to be porous to a certain extent to fulfil this purpose. When large bottles are put up in this way it is desirable as long as it appears worth the trouble to shield the stopper with a cap of metal or wire fastened down by strings sealed down but the asbestos stopper is firm enough for all practical purposes.

Second. In filling the bottles or receptacles so prepared with milk or other liquid with exclusion of air as far as possible.

It is undoubtedly the case that the milk from a healthy animal contains no life germs but that the germs are taken up during the passage through the air and

intermediate vessels. I therefore avoid intermediate vessels and milk direct into the bottles by means of peculiarly shaped funnels. The rim is bent inwards and the tube contracted in one place so that no milk can run or squirt out and the foam is prevented from entering the bottle by the narrow place in the tube. In this way the danger of soiling the milk with atmospheric germs is reduced to a minimum. I have kept milk fresh without heating or adding anything whatever to it for several weeks in this way. For wine beer or other perishable liquids it just as important to bottle direct from the first receivers into the disinfected vessels or bottles—Heating the glass funnels each time is very important.

Fig 1 is an elevation, and fig 2 a section of a funnel for use under the second part of my invention. The rim *a* of the funnel is bent inwards and the tube or stem *b* is contracted at *c*

Third. In closing such filled botttles or receptacles after the said liquid has been heated or boiled or not with stoppers of a fibrous mineral material such as asbestos. A sealing of solid paraffin or other suitable mineral substance capable of being melted may also be used if desired.

Bottles filled in that manner may be treated in two ways—Either by stoppering forthwith with previously heated asbestos stoppers on withdrawing the funnel or by heating to boiling point in a bath with the aid of what I call the boiling stopper described later on. Milk in leaving the animal has a temperature of 37° C. When a glass jar clothed in wickerwork is used for milking into by funnel that temperature is only lowered by 2 to 3° C when the demijohn is full. The fluid goes into the absolutely clean bottle which contains air free from germs. This air it sends out of the bottle by displacement and no air goes into the bottle from outside the risk of the milk becoming infected by germs from the atmosphere when leaving the cow is very small unless in hot weather in a very impure air or when the electricity attending a thunderstorm either produces changes in the cows body or increases the activity of the germ life of the air.

Fig 3 is a section and fig 4 an elevation of a bottle neck *d* with stopper of compressed or consolidated asbestos *e* and capsule or sealing *f*

Fourth. In making stoppers for bottles or receptacles of asbestos or like fibre compressed and consolidated in moulds to the required shape.

Fig 5 is an elevation, fig 6 a plan closed, and fig 7 a plan open of a mould used under the fourth part of my invention in making stoppers of asbestos or like consolidated and compressed fibre. The mould is made in two parts *g. h* hinged together at *i* and provided with semi cylindrical cavities *j* in which the asbestos or like fibre is compressed to the desired shape. *k* are semi circular openings through which a tube may pass into and through the asbestos stopper as setforth under the fifth part.

Fifth. In making stoppers for bottles or receptacles in which the liquid is to be heated or boiled of asbestos or like fibre consolidated around a glass or rigid tube drawn out above the stopper to a fine capillary tube which is afterwards closed at the proper time by means of the blow pipe. The tube above the capillary portion is expanded into a cup or chalice.

Fig 8 is a view partly in section and partly in elevation illustrative of a stopper for a bottle in which the liquid is to be heated. *d* bottle neck, *e* asbestos stopper, *l* glass tube passing through the stopper and drawn out to a fine capillary tube at *m*. The said tube is continued in a series of bends *n* and ends in a cup or chalice *o*.

Having now described the nature of the said invention in such manner that others will be enabled to carry my improvements into effect I claim:—

First. Closing or stoppering the mouths or orifices of bottles before they are annealed substantially in the manner and for the purpose setforth.

Second. Filling bottles prepared under the first part with milk or other liquid substantially as setforth.

Third. Closing bottles or receptacles filled with milk or liquid substantially as setforth with asbestos or like fibrous stoppers.

Fourth. Making compressed or consolidated asbestos or like fibrous stoppers in moulds substantially as setforth.

Fifth. Moulds for making stoppers substantially as herein setforth.

Sixth. Asbestos stoppers consolidated round a glass tube substantially as setforth.

In Witness Whereof I the said Otto Ernest Pohl have hereunto set my hand and seal this 23rd day of April in the year of Our Lord, one thousand eight hundred and eighty four.

O. E POHL (L.S.)

LONDON: Printed by EYRE AND SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

1884.